

Sustainability Issues in Marine Fisheries Resource Management

Sahaya Vilovetheen Thilaka

Department of Fish Biology and Resource Management, TNJFU- Fisheries College and Research Institute,
Thoothukudi, Tamil Nadu

SUMMARY

The management of marine fisheries resources is confronted with pressing sustainability challenges. This article highlights the key issues surrounding this complex endeavor. Overfishing, bycatch, habitat destruction, illegal fishing, and climate change are among the multifaceted issues threatening the delicate balance of marine ecosystems and the livelihoods of those dependent on them. International cooperation and ecosystem-based management are vital approaches to address these concerns. Adequate data collection, governance, and enforcement, as well as social and economic considerations, are integral aspects of achieving sustainable marine fisheries management. This article underscores the urgency of addressing these sustainability issues to preserve the world's oceans and secure the future of fisheries for generations to come.

INTRODUCTION

Sustainability issues in marine fisheries resource management are critical concerns that revolve around the management and conservation of the world's oceans and their valuable fish stocks. These issues arise due to various human activities, climate change, and ecological factors. Here are some of the key issues.

Overfishing:

Overfishing occurs when fish are harvested at a rate that exceeds their ability to reproduce and replace themselves. This can lead to the depletion of fish populations and disrupt marine ecosystems. Many fisheries worldwide are currently overfished or at risk of becoming overfished.

Bycatch:

Bycatch refers to the unintentional capture of non-target species, such as dolphins, turtles, and seabirds, in fishing gear. It often results in the unnecessary mortality of these species and can have significant ecological consequences.

Habitat Destruction:

Bottom trawling and other fishing practices can damage sensitive marine habitats like coral reefs, seamounts, and kelp forests. Destroying these habitats can harm not only target species but also many other species that rely on them for food and shelter.

Illegal, Unreported, and Unregulated (IUU) Fishing:

IUU fishing undermines sustainable fisheries management by operating outside the law, often leading to overfishing and the depletion of fish stocks. It can also be associated with human rights abuses and organized crime.

Climate Change:

Climate change affects ocean temperature, acidity, and currents, impacting fish distribution and migration patterns. Some fish populations are shifting to cooler waters, affecting traditional fishing grounds and creating new challenges for fisheries management.

Ecosystem-Based Management:

Many fisheries management approaches historically focused on single species, but modern approaches increasingly emphasize ecosystem-based management. This recognizes the interconnectedness of species in marine ecosystems and aims to maintain ecosystem health while managing fisheries sustainably.

Data Deficiency:

Accurate and up-to-date data on fish stocks is crucial for effective management. However, many regions lack comprehensive fisheries data, making it challenging to assess the status of fish populations and set appropriate catch limits.

Poor Governance and Enforcement:

Effective fisheries management requires robust governance structures and enforcement mechanisms. Inadequate enforcement of regulations and governance issues can lead to unsustainable fishing practices.

Subsidies:

Government subsidies for the fishing industry can encourage overfishing by reducing the economic cost of fishing. Reforming subsidies to align with sustainability goals is a major challenge in fisheries management.

Social and Economic Impacts:

Fisheries management decisions can have significant social and economic impacts on fishing communities. Balancing conservation goals with the livelihoods of those dependent on fishing can be a complex and contentious issue.

Approaches for sustainable development**IUU Fishing:**

Illegal, Unreported, and Unregulated (IUU) fishing is a global issue with severe environmental, economic, and social consequences. International recognition of the need for stronger fisheries governance at national and regional levels led to the adoption of the International Plan of Action to combat IUU fishing (IPOA-IUU) by the FAO Committee on Fisheries in 2001.

Shift from Open-access to User Rights:

Effective resource management and habitat protection require transitioning from open-access fisheries to regulated systems with allocated resources and user rights. This approach provides incentives to reduce excessive fishing capacity, a major contributor to overfishing. It also safeguards the interests of artisanal fishers.

Reduction of Fishing Effort:

Fishing effort reduction is essential, especially in mechanized sectors where activities like ring seine and mini-trawl fishing have raised concerns about stock sustainability. Lengthened fishing durations, advanced technology, and increased efficiency in mechanized vessels have exacerbated the problem. Restricting effort through vessel limitations, fishing days, engine power, and gear modifications is crucial.

Diversification of Fishing Effort:

Addressing conflicts between Sri Lankan and Indian fishermen over traditional fishing grounds, converting large trawlers to deep-sea fishing vessels, and enhancing fleet diversification are necessary steps. Such measures protect marine habitats and promote sustainable fisheries, with financial assistance from governments.

Licensing:

Implementing a unified vessel registration and licensing scheme is vital for monitoring fishing effort and optimizing resource usage. Mandatory registration and licensing, coupled with fee adjustments and restrictions to discourage new entrants, can help manage fisheries effectively.

Total Allowable Catch & Individual Transferable Quota:

Many countries impose Total Allowable Catch (TAC) limits to protect fish stocks. TAC restrictions, guided by scientific recommendations, aim to maintain sustainable fishing levels. Individual Transferable Quotas (ITQs) can be used to allocate shares of the TAC to vessels based on their efficiency.

Mesh-Size Regulation:

Controlling mesh sizes in trawls and nets helps protect juvenile fish and allows them to grow, contributing to higher biomass and sustainable fishing. Enforcement is challenging but critical to prevent the destruction of juvenile fish.

Marine Protected Areas (MPAs):

Establishing MPAs in fish spawning and feeding areas helps preserve fish populations and biodiversity. Closing these areas to fishing enables fish stock recovery and benefits fisheries in the long run.

Seasonal Closure of Fishing:

Seasonal closures during spawning periods protect fish stocks from mechanized fishing pressure, allowing natural replenishment. These bans reduce annual fishing effort and support stock recovery.

Alternative Harvesting Methods:

Selective fishing methods, such as squid jigging over trawling, minimize bycatch and habitat damage. Successional fishing, using different gear at different times according to fish behavior, can be adopted. Fish aggregating devices (FADs) also hold promise for oceanic and artisanal fisheries.

Bycatch and Discards in Trawl Fisheries:

Bycatch, including non-target species and vulnerable marine life, is a significant problem in trawl fisheries. Technological measures like gear modifications, bycatch reduction devices, and operational techniques can help minimize bycatch and discards.

Optimum Utilization of Harvested Resources:

Supporting skilled deep-sea fishermen, upgrading their crafts, and providing ice boxes can enhance economic yields from oceanic tuna fishing, benefiting international trade.

Remote Sensing Technologies:

Using remote sensing, particularly satellite technology, for fisheries management and forecasting can improve fishing efficiency, safety, and resource utilization.

GIS-Based Resource Mapping:

Mapping fishing operations and resources using Geographic Information Systems (GIS) aids in safety at sea and marine spatial planning for future coastal development. Overall, a combination of regulatory, technological, and management measures is essential to address these sustainability challenges in fisheries management effectively.

CONCLUSION

The seafood industry faces a significant challenge due to a new regulation introduced by the European Union aimed at combatting illegal, unreported, and unregulated (IUU) fishing. This regulation mandates the issuance of a 'Catch Certificate' by the Marine Products Export Development Authority (MPEDA) for all exports to the European Union since January 2010. Consequently, there is a need to establish a system for certifying sustainable fishing practices and labeling fish and fishery products with eco-friendly credentials through authorized agencies. Additionally, it is essential to raise awareness among stakeholders about emerging non-tariff barriers, including standards, testing procedures, labeling requirements, and certification prerequisites in the global fish trade. Encouraging the adoption of sustainable fishing and fish farming methods is crucial in this context.

REFERENCES

- Abdussamad, E.M. and N.G.K. Pillai (2009). Significance of small pelagics in the marine ecosystem in sustaining the stock and fishery of Indian seas. In: "Marine Ecosystems Challenges and Opportunities" Book of Abstracts, p. 106-107, Marine Biological Association of India, February 9 -12, Cochin
- Akilesh, K.V., Ganga, U., Pillai, N.G.K. Manjebayakath, H., Bineesh K.K. and Rajool Shanis, C.P. (2009) Deep sea Chondrichthyans - a study at Cochin Fisheries Harbour, Kerala, India, In: Marine Ecosystems Challenges and Opportunities, Book of Abstracts, p. 164, Marine Biological Association of India, February 9-12, Cochin
- FAO (2008) Report of the FAO Workshop on vulnerable ecosystems and destructive fishing in Deep sea fisheries, FAO Fish Rep. No. 829, FAO, Rome:18.

- Johnson, TR. and van Densen, W.I.T (2007) The benefits and organization of cooperative research for fisheries management, ICES J. Mar. Sci. 64: 834-840
- Pillai, N.G.K., Vivekanandan, E., Ganga, U. and Ramachandran, C. (2009) Marine Fisheries Policy Brief 1 (Kerala), Central Marine Fisheries Research Institute: 24.